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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,428	11/21/2001	Noboru Iwata	49443DIV (70904)	4238

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 10/27/2003

16

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/990,428

CLO-14  
Applicant(s)

IWATA ET AL.

Examiner

Kevin M Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-25 is/are pending in the application.
- 4a) Of the above claim(s) 17 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18 and 20-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Amendments to the specification and claims 18 and 20 - 25, filed on July 28, 2003, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Double Patenting***

3. Claims 18 and 20 - 25 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 12 of Iwata et al. ('765 B1) as evidenced by applicants' admissions.

Regarding claim 18, although the conflicting claims are not identical, they are not patentably distinct from each other because Iwata et al. claim a magneto-optical recording medium comprising at least a first magnetic layer, a second magnetic layer and a third magnetic layer, which are layered in this order (*claim 12, lines 1 – 4*), wherein said first magnetic layer is formed of a perpendicularly magnetized film having a relatively small wall coercivity and a relatively large wall mobility compared with the third magnetic layer in the vicinity of a predetermined temperature (*claim 12, lines 4 – 8*), and means for irradiating a light beam to a predetermined temperature during reproduction, thereby heating the first magnetic layer to the compensation temperature or higher (*claim 12, lines 16 – 23*).

The limitation “said first magnetic layer is composed so as to be characterized as having a larger magnetic wall coercivity at a rear part of the light beam spot than a front part of the light beam spot and so as to restrict movement of a domain wall located beyond the light beam spot rear part” is a functional limitation(s). As defined in the MPEP, “[a] functional limitation is an attempt to define something by what it does, rather than by what it is (e.g., as evidenced by its specific structure or specific ingredients). There is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971)” – MPEP § 2173.05(g). However, the examiner notes that “where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an ***inherent characteristic of the prior art***, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristics relied on” (emphasis added) - MPEP § 2183.

In the instant case, the claimed limitation(s) is a functional limitation(s) and is deemed to be an inherent characteristic of the prior art since the prior art is substantially identical in composition and/or structure. The examiner’s sound basis for this assertion is that the prior art product is substantially identical in structure and function as evidenced by Figure 1, below, and by Iwata et al. Figures 1 - 3.

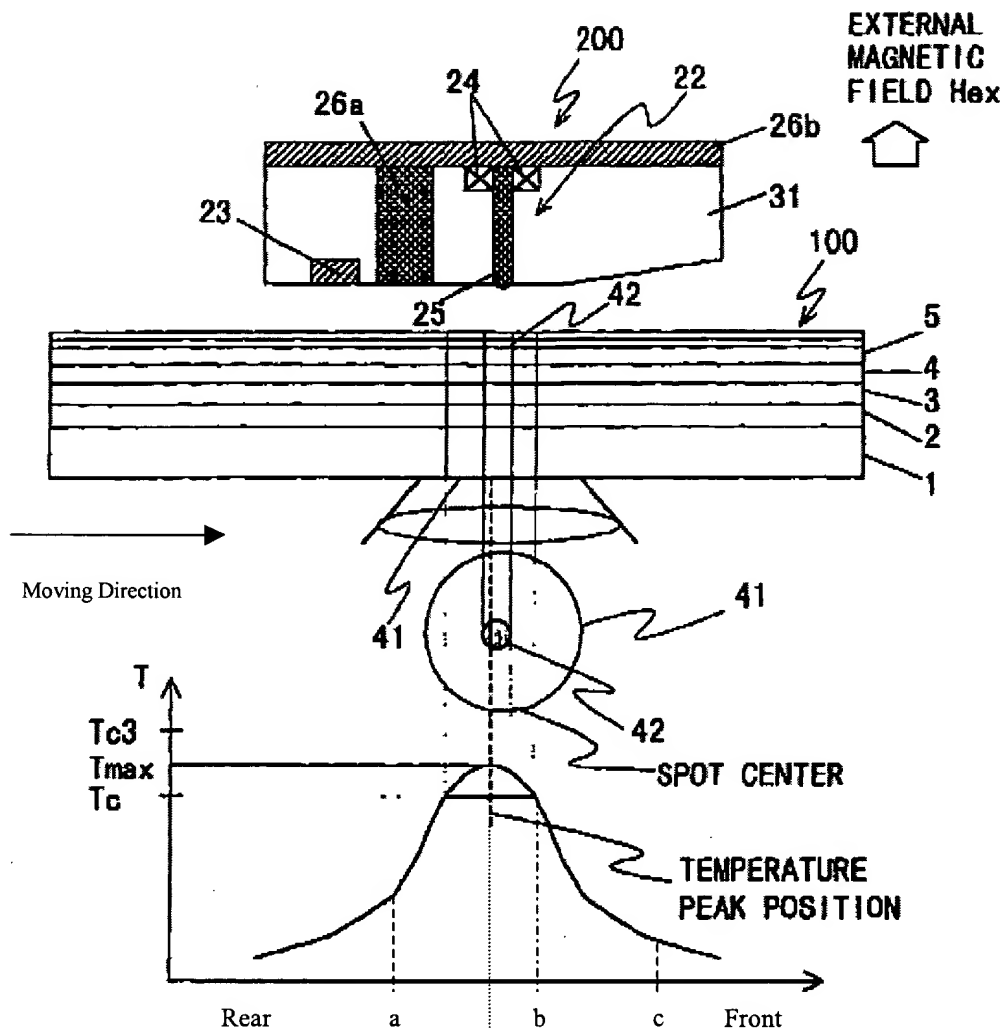


Figure 1: Illustration of temperature distribution in a magneto-optical recording medium.

Given the temperature profile that develops (even if slightly different than the perfect Gaussian distribution illustrated above), the examiner notes that a point <a> “at a rear part of the light beam spot” will have both a point <b> and <c> with temperatures greater and lower than it, respectively. Since the wall coercivity is a function of temperature (*see applicants’ specification, pages 5 – 10 – as T increases to the*

*compensation temperature,  $H_w$  becomes large*), the Examiner notes that at least one of points <b> or <c> will inherently meet applicants' claimed limitation of "said first magnetic layer has a larger magnetic wall coercivity at a rear part of the light beam spot than a front part of the light beam spot". Furthermore, while the Examiner acknowledges that the specification of Iwata et al. cannot be relied upon in a double patenting rejection, the specification can be used for guidance for clarification of the claimed invention. In the instant case, the claimed invention of Iwata et al. is deemed to inherently possess the claimed functional limitations.

Therefore, in addition to the above disclosed limitations, the presently claimed property of said "said first magnetic layer is composed so as to be characterized as having a larger magnetic wall coercivity at a rear part of the light beam spot than a front part of the light beam spot and so as to restrict movement of a domain wall located beyond the light beam spot rear part" would have inherently been present because the claimed and prior art products are substantially identical in structure and the claimed behavior appears to be an inherent function of the medium disclosed by Iwata et al., as evidenced by Figures 1 - 3.

Regarding claims 20, 21 and 25, the Examiner notes that the claimed domain wall limitations are inherent limitations for identical reasons as cited above (*as evidenced by Iwata et al., Figures 1 – 3*). The limitation regarding heating to the compensation temperature of the first magnetic layer is also disclosed by Iwata et al. (*claim 12*).

Regarding claims 22 and 24, Iwata et al. disclose the claimed property limitations (*claims 1 and 3*).

Regarding claim 23, the Examiner notes that the claimed temperature limitation simply means that the Curie temperature of the second magnetic layer is less than the predetermined temperature during heating, which is deemed to be an inherent feature of the Iwata et al. claimed invention (*as evidenced by Figures 1 – 3 and claims 1 and 12*).

#### ***Claim Rejections - 35 USC § 102***

4. Claims 18 and 20 - 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Aratani (WO99/39342) as evidenced by applicants' admissions. See U.S. Patent No. 6,572,957 B1) which is the U.S. equivalent of WO '342.

Aratani discloses a magneto-optical recording medium comprising at least a first magnetic layer (*Figure 1, layer 11*), a second magnetic layer (*layer 13*) and a third magnetic layer (*layer 14*), which are layered in this order, wherein said first magnetic layer is formed of a perpendicularly magnetized film having a relatively small wall coercivity and a relatively large wall mobility compared with the third magnetic layer in the vicinity of a predetermined temperature (*col. 4, lines 29 – 37; col. 5, lines 27 – 33; col. 6, lines 5 – 14 and Table 1*), and means for irradiating a light beam to a predetermined temperature during reproduction (*Figures*).

The limitation “said first magnetic layer is composed so as to be characterized as having a larger magnetic wall coercivity at a rear part of the light beam spot than a

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front part of the light beam spot and so as to restrict movement of a domain wall located beyond the light beam spot rear part” is a functional limitation(s) for the reasons cited above.

In the instant case, the claimed functional limitation(s) is deemed to be an inherent characteristic of the prior art since the prior art is substantially identical in composition and/or structure. The examiner’s sound basis for this assertion is that the prior art product is substantially identical in structure and function and that the wall coercivity,  $H_w$ , is a function of temperature (higher  $T$  = higher  $H_w$ ) and at least one “rear part” of the light beam will have a higher temperature than at least one “front part” (*Figure 2*). Furthermore, the Examiner notes that *Figure 2* explicitly shows that the domain wall in the rear part of the medium does not enter the light beam (*col. 3, lines 39 – 46; col. 7, lines 19 – 27 and 49 – 52; col. 8, lines 9 – 48; and col. 9, lines 6 – 10*).

Regarding claims 20 and 21, Aratani discloses the claimed domain wall movement limitations (*Figure 2*).

Regarding claims 22 and 24, Aratani discloses the claimed property limitations (*col. 3, line 65 bridging col. 4, line 2 and Table 1*).

Regarding claim 23, the Examiner notes that the claimed temperature limitation simply means that the Curie temperature of the second magnetic layer is less than the predetermined temperature during heating, which is taught by Aratani (*Figure 2*).



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5. Claims 18, 20, 21, 23 and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Fujii et al. (U.S. Patent No. 6,249,489 B1) as evidenced by applicants' admissions.

Fujii et al. disclose a magneto-optical recording medium comprising at least a first magnetic layer (*Figure 12A, layer 34*), a second magnetic layer (*layer 35*) and a third magnetic layer (*layer 36*), which are layered in this order, wherein said first magnetic layer is formed of a perpendicularly magnetized film having a relatively small wall coercivity and a relatively large wall mobility compared with the third magnetic layer in the vicinity of a predetermined temperature (*col. 15, lines 11 - 19*), and means for irradiating a light beam to a predetermined temperature during reproduction (*Figures*).

The limitation ""said first magnetic layer is composed so as to be characterized as having a larger magnetic wall coercivity at a rear part of the light beam spot than a front part of the light beam spot and so as to restrict movement of a domain wall located beyond the light beam spot rear part"" is a functional limitation(s) for the reasons cited above.

In the instant case, the claimed functional limitation(s) is deemed to be an inherent characteristic of the prior art since the prior art is substantially identical in composition and/or structure. The examiner's sound basis for this assertion is that the prior art product is substantially identical in structure and function and that the wall coercivity,  $H_w$ , is a function of temperature (higher  $T$  = higher  $H_w$ ) and at least one "rear part" of the light beam will have a higher temperature than at least one "front part" (*Figure 2*). Furthermore, the Examiner notes that *Figure 12* explicitly shows that the

domain wall in the rear part of the medium does not enter the light beam (*col. 5, line 49 bridging col. 6, line 8; col. 12, lines 32 – 36; col. 15, line 38 bridging col. 16, line 18; and col. 17, lines 11 - 14*).

Regarding claims 20 and 21, Fujii et al. disclose the claimed domain wall movement limitations (*Figure 12*).

Regarding claim 23, the Examiner notes that the claimed temperature limitation simply means that the Curie temperature of the second magnetic layer is less than the predetermined temperature during heating, which is taught by Fujii et al. (*Figure 12*).

Regarding claim 24, Fujii et al. disclose the claimed property limitation (*col. 15, lines 11 - 19*).

### ***Claim Rejections - 35 USC § 103***

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al. as applied above, and further in view of Shiratori (U.S. Patent No. 6,403,205).

Fujii et al. is relied upon as described above.

Fujii et al. fail to disclose that in the rear portion of the light beam, the first magnetic layer is in the vicinity of its compensation temperature.

However, Shiratori teaches the importance of optimizing the heating to approach the highest temperature useable, either the Curie temperature or compensation temperature since the compensation temperature results in the magnetic layer changing from a perpendicular to in-plane magnetic layer (*col. 7, line 66 bridging col. 8, line 14*).

The Examiner deems that it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the temperature of the rear part of the light beam through routine experimentation, especially given the teaching in Shiratori regarding the desire to optimize the domain wall movement ability and the magnetic properties to produce a magneto-optical medium with easily moveable domain walls that are still easy to detect. *In re Boesch*, 205 USPQ 215 (CCPA 1980); *In re Geisler*, 116 F. 3d 1465, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Aller*, 220 F.2d, 454, 456, 105 USPQ 233, 235 (CCPA 1955).

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aratani as applied above, and further in view of Shiratori ('205).

Aratani is relied upon as described above.

Aratani fail to disclose that in the rear portion of the light beam, the first magnetic layer is in the vicinity of its compensation temperature.

However, Shiratori teaches the importance of optimizing the heating to approach the highest temperature useable, either the Curie temperature or compensation temperature since the compensation temperature results in the magnetic layer changing from a perpendicular to in-plane magnetic layer (*col. 7, line 66 bridging col. 8, line 14*).

The Examiner deems that it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the temperature of the rear part of the light beam through routine experimentation, especially given the teaching in Shiratori regarding the desire to optimize the domain

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wall movement ability and the magnetic properties to produce a magneto-optical medium with easily moveable domain walls that are still easy to detect.

***Response to Arguments***

**8. The rejection of claim 18 under 35 U.S.C § 102 – Fujii or applicants' admissions or Yonezawa**

**The rejection of claim 18 under 35 U.S.C § 103(a) –Yonezawa in view of applicants' admissions**

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. "so as to restrict movement of a domain wall located beyond the light beam spot rear part") no longer anticipated, nor rendered obvious, by the above noted rejection.

**9. The rejection of claim 18 under Double Patenting – Hirokane**

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The above noted rejection has been withdrawn in view of applicant(s) arguments, which have been found persuasive. Specifically, applicant(s) argue that the rear part of the light beam would not have a higher wall coercivity since it is taught to be non-

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magnetic, which is deemed to not be anticipated, nor rendered obvious, by the above noted rejection.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shiratori (U.S. Patent No. 6,197,440 B1) and Miyaoka et al. (U.S. Patent No. 6,069,852) both acknowledge the problem of domains from the rear part of a DWDD medium being read as "ghost signals" with various methods attempted to solve the problem (*see underlined/boxed sections of references*). Ogiwara et al. (U.S. Patent No. 5,598,399) teach controlling the wall coercivity to preferably less than 0.5kOe (39.7 kA/m) to effect the signal-to-noise characteristics of the magnetic layer (*col. 1 – 2 and Figure 12*).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Applicants' amendment resulted in embodiments not previously considered (i.e. "so as to restrict movement of a domain wall located beyond the light beam spot rear part") which necessitated the new grounds of rejection, and hence the finality of this action.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



KMB  
October 14, 2003



Paul Thibodeau  
Supervisory Patent Examiner  
Technology Center 1700